

WHAT IS CLAIMED IS:

- 1 1. A method for managing connections in a network comprising:
2 receiving a packet associated with a request for a protocol-based
3 connection;
4 assigning the packet to a selected one of a plurality of classes;
5 forwarding the packet if number of packets forwarded from the selected
6 class in a predetermined time interval has not reached a first maximum count; and
7 dropping the packet if number of packets forwarded from the class in the
8 predetermined time interval has reached the first maximum count.
- 1 2. The method of claim 1 wherein the first maximum count is
2 adjustable to effectuate different rates of packet forwarding for the selected class.
- 1 3. The method of claim 1 wherein the predetermined time interval
2 is adjustable to effectuate different rates of packet forwarding for the selected class.
- 1 4. The method of claim 1 wherein a counter associated with the
2 selected class is used to determine whether number of packets forwarded from the
3 selected class in the predetermined time interval has reached the first maximum count.
- 1 5. The method of claim 4 wherein the counter is a count-down
2 counter.
- 1 6. The method of claim 1 wherein the packet is forwarded only if a
2 count of active connection requests has not reached a second maximum limit.
- 1 7. The method of claim 6 wherein the count of active connection
2 requests is incremented when a packet associated with a request for a protocol-based
3 connection is forwarded from the selected class.
- 1 8. The method of claim 6 wherein the count of active connection
2 requests is decremented when a protocol-based connection is established.
- 1 9. The method of claim 6 wherein the count of active connection
2 requests is decremented when a protocol-based connection is terminated before being
3 established.

1 10. The method of claim 1 further comprising:
2 after forwarding the packet, receiving an additional packet associated
3 with the requested protocol-based connection;
4 assigning the additional packet to a pass-through class; and
5 forwarding the additional packet even if the first maximum count or the
6 second maximum count has been reached.

1 11. The method of claim 10 wherein the additional packet relates to
2 status of the requested protocol-based connection.

1 12. The method of claim 10 wherein the additional packet relates to
2 termination of the requested protocol-based connection.

1 13. The method of claim 1 wherein the protocol-based connection is
2 based on a Point-to-Point Protocol (PPP).

1 14. The method of claim 1 wherein the protocol-based connection is
2 based on a Point-to-Point Protocol over Ethernet (PPPoE).

1 15. The method of claim 1 wherein the protocol-based connection is
2 based on a Layer Two Tunneling Protocol (L2TP).

1 16. The method of claim 1 wherein the protocol-based connection is
2 based on a Dynamic Host Configuration Protocol (DHCP).

1 17. An apparatus for managing connections in a network comprising:
2 a control plane operable to process requests for protocol-based
3 connection; and
4 a data plane operable to
5 receive a packet associated with a request for a protocol-based
6 connection,
7 assign the packet to a selected one of a plurality of classes,
8 forward the packet to the control plane if number of packets forwarded
9 from the selected class in a predetermined time interval has not reached a first
10 maximum count, and

11 drop the packet if number of packets forwarded from the class in the
12 predetermined time interval has reached the first maximum count.

1 18. The apparatus of claim 17 wherein the first maximum count is
2 adjustable to effectuate different rates of packet forwarding for the selected class.

1 19. The apparatus of claim 17 wherein the predetermined time
2 interval is adjustable to effectuate different rates of packet forwarding for the selected
3 class.

1 20. The apparatus of claim 17 wherein a counter associated with the
2 selected class is used to determine whether number of packets forwarded from the
3 selected class in the predetermined time interval has reached the first maximum count.

1 21. The apparatus of claim 20 wherein the counter is a count-down
2 counter.

1 22. The apparatus of claim 17 wherein the packet is forwarded only
2 if a count of active connection requests has not reached a second maximum limit.

1 23. The apparatus of claim 22 wherein the count of active connection
2 requests is incremented when a packet associated with a request for a protocol-based
3 connection is forwarded from the selected class.

1 24. The apparatus of claim 22 wherein the count of active connection
2 requests is decremented when a protocol-based connection is established.

1 25. The apparatus of claim 22 wherein the count of active connection
2 requests is decremented when a protocol-based connection is terminated before being
3 established.

1 26. The apparatus of claim 17 further comprising:
2 after forwarding the packet, receiving an additional packet associated
3 with the requested protocol-based connection;
4 assigning the additional packet to a pass-through class; and
5 forwarding the additional packet even if the first maximum count or the
6 second maximum count has been reached.

- 1 27. The apparatus of claim 26 wherein the additional packet relates
2 to status of the requested protocol-based connection.
- 1 28. The apparatus of claim 26 wherein the additional packet relates
2 to termination of the requested protocol-based connection.
- 1 29. The apparatus of claim 17 wherein the protocol-based connection
2 is based on a Point-to-Point Protocol (PPP).
- 1 30. The apparatus of claim 17 wherein the protocol-based connection
2 is based on a Point-to-Point Protocol over Ethernet (PPPoE).
- 1 31. The apparatus of claim 17 wherein the protocol-based connection
2 is based on a Layer Two Tunneling Protocol (L2TP).
- 1 32. The apparatus of claim 17 wherein the protocol-based connection
2 is based on a Dynamic Host Configuration Protocol (DHCP).
- 1 33. A system for managing connections in a network comprising:
2 means for receiving a packet associated with a request for a protocol-
3 based connection;
4 means for assigning the packet to a selected one of a plurality of classes;
5 means for forwarding the packet if number of packets forwarded from
6 the selected class in a predetermined time interval has not reached a first maximum
7 count; and
8 means for dropping the packet if number of packets forwarded from the
9 class in the predetermined time interval has reached the first maximum count.